REMARKS

The applicants appreciate the Examiner's thorough examination of the application and request reexamination and reconsideration of the application in view of the preceding amendments and the following remarks.

The Examiner has indicated that claims 34-59 were misnumbered and therefore not in accordance with 37 CFR 1.126. The Examiner has renumbered the claims but indicated applicants are required to correct the claim dependencies. In response, as shown above under AMENDMENT D, the applicants have corrected the dependencies to the re-numbered claims.

The Examiner rejects claims 35-39, 42-44, 46-51, 54-57 and 59 under 35 U.S.C. 103(a) as being unpatentable over Wood (U.S. Patent No. 4,511,815) in view of Nakamura *et al.* (U.S. Patent No. 4,976,101).

To advance prosecution, the applicants have amended independent claim 35 to recite in part: "wherein the plurality of switches are substantially simultaneously switched on and maintained in an on state by at least one time varying electrical control on-pulse and/or pulses produced by said control driver, said on-pulse being substantially of a first polarity, and wherein the plurality of switches are substantially simultaneously switched off and maintained in an off state by at least one time varying electrical control off-pulse and/or pulses produced by said control driver, said off-pulse being substantially of a second polarity, said second polarity being opposite to said first polarity."

The module as now recited in applicants' amended claim 35 clearly recites the plurality of switches can be switched on and maintained in an on state by at least one time varying electrical control on-pulse and/or pulses and substantially simultaneously switched

off and maintained in an off state by at least one time varying electrical control off-pulse and/or pulses. The applicants have also amended independent claims 47 and 60 to similarly recite the plurality of switches are switched on and maintained in an on state by at least one signal and/or signals and switched off and maintained in an off state by at least one signal and/or signals.

In sharp contrast, Wood does not teach, suggest or disclose a plurality of switches which can be switched on and maintained in an on state by at least one time varying electrical control on-pulse and/or pulses and substantially simultaneously switched off and maintained in an off state by at least one time varying electrical control off-pulse and/or pulses. Instead, Wood, as shown in Figs. 1 and 2a-2d, attached hereto as Exhibit A, and Fig. 4 relies on the down transition of a single control signal, indicated by arrow 100, to turn the desired switch on (e.g., MOSFET 10), indicated by arrow 102. Wood then relies on the up transition of the same signal, indicated by arrow 104 to turn the switch off, as indicated by arrow 106. *See also* col. 3, line 7 to col. 4, line 4. The design of Wood requires a hard shut-off of the alleged switch, MOSFET 10, indicated by arrow 104 of Exhibit A to mitigate gate leakage of MOSFET 10 from causing spontaneous and uncontrolled opening of MOSFET 10 as a switch. Therefore, the design of Wood prevents keeping the alleged switching device (MOSFET 10) on and maintained in an on state for an extended period of time. As shown by arrow 110 of Exhibit B attached hereto, the down transition of the single logic signal of Wood turns the switch on as indicated by arrow 112. However, if this signal is maintained in the on position for any extended period of time, as indicated by arrow 114, the alleged switch 10 (e.g., MOSFET 10) undergoes gate leakage, indicated by arrow 116. The result of such leakage can lead to a cascading failure or the remain

switches, e.g., the plurality of switches 10 shown in Fig. 4 of Wood, known as a "zipper effect." Wood clearly teaches that the on time of switch 10 is limited by this leakage: "Once the transformer 17 saturates, the intrinsic diode 26 isolates the collapse of the voltage of winding 18 from the gate 20 of power MOSFET 10. Therefore, the input gate capacitance of the MOSFET 10 remains charged and holds the gate biased in a fully enhanced condition of time limited only by the gate leakage current of power MOSFET 10 as shown, for example in FIG. 2c.", Col 3, lines 43-50, emphasis added.

In contrast, the applicants' claimed modulator as recited in independent claim 35 utilizes a plurality of switches that can be switched on and maintained in an on state by at least one time varying electrical control on-pulse and/or pulses and substantially simultaneously switched off and maintained in an off state by at least one time varying electrical control off-pulse and/or pulses. The claimed modulator can produce a series of time varying control on-pulses, indicated by arrows 116, 118, 120, and 122, of Exhibit B to turn the plurality of switches on, as indicated by arrow 124, and maintain in an on state for an extended or arbitrary long period of time as indicated by arrow 126. This eliminates the limitation on time inherent in Wood.

Clearly, the claimed at least one time varying electrical control on-pulse and/or pulses which maintains the plurality of switches in an on state as recited in applicants' independent claim 35 is not disclosed, taught or suggested by Wood.

Moreover, Wood specifically teaches and discloses that switch 10 must be turned off first before it can be turned on again, as indicated by arrows 100 and 104 of Exhibit A. As discussed above, Wood teaches the transition of a single voltage signal to turn the plurality of switches on and different transition of the same signal to turn switch 10 off.

In contrast, the applicants' claimed modulator recites that at least one time varying electrical control off-pulse and/or pulses, as indicated by arrows 128, 130, 132, and 134 of Exhibit B, can be used to switch the plurality of switches off and maintain the switches in off state for an extended period of time, as indicated by arrow 134. Therefore, Wood does not teach, suggest or disclose at least one time varying electrical control off pulse and/or pulses which switches the plurality of switches off and maintains the switches in an off state as recited by applicants' independent claim 35.

Applicants' independent claims 47 and 60 similarly recite in part at least one time varying electrical control on-pulse (or signal) and/or pulses (or signals) which maintain the plurality of switches in an on state and at least one time varying control off-pulse (or signal) and or off-pulses (or signals) which maintain the plurality of switches in an off state.

Accordingly, Wood does not teach, suggest, or disclose each and every element of the applicants' invention as recited in independent claims 35, 47, and 60, namely, a plurality of switches, wherein the plurality of switches are substantially simultaneously switched on and maintained in an on state by at least one time varying electrical control on-pulse (or signal) and/or pulses (or signals) and wherein the plurality of switches are substantially simultaneously switched off and maintained in an off state by at least one time varying electrical control off-pulse (or signal) and/or pulses or signals.

Accordingly, applicants' independent claims 35, 47 and 60 are allowable and patentable under 35 U.S.C. §103 over Wood in view of Nakamura. Because dependent claims 36-39, 42-44, 46, 48-51, 54-57, and 59 depend from allowable base claims, claims 36-39, 42-44, 46, 48-51, 54-57, and 59 are clearly allowable and patentable under 35 U.S.C. §103 over Wood in view of Nakamura.

Moreover, Nakamura clearly teaches away from utilizing a voltage limiting device in parallel with the input terminal pair to provide a common defined voltage to each switch. Nakamura specifically teaches and discloses the input voltage limiting device (e.g., ZD1 and ZD2 in Fig. 3) are prior art and overcomes the problems associated with the prior art by utilizing the circuits shown in Figs. 1 and 2. Clearly, if Nakamura overcomes the problems of the prior art associated as shown in Fig. 3, Nakamura must teach away from the use of the input voltage limiting device shown in Fig. 3.

The Examiner rejects claims 40, 41, 52, and 53 under 35 U.S.C. 103(a) as being unpatentable over Wood (U.S. Patent No. 4,511,815) in view of Gaudreau *et al.* (U.S. Patent No. 5,646,833). The Examiner also rejects claims 58 and 60 under 35 U.S.C. 103(a) as being unpatentable over Wood in view of Nakamura, and further in view of Dassonville (U.S. Patent No. 4,370,607). The Examiner further rejects claim 45 under 35 U.S.C. 103(a) as being unpatentable over Wood in view of Nakamura and further in view of Bourgeois (U.S. Patent No. 5,469,041).

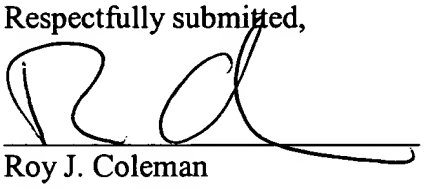
As shown above, Wood does not disclose each and every element of applicants' independent claims 35 and 47. Because claims 40, 41, 45, 52, 53, and 58 depend from allowable base claims, claims 40, 41, 45, 52, 53, and 58 are clearly allowable and patentable under 35 U.S. C. §103 over Wood in view of Gaudreau, Nakamura and Dassonville. Because Wood does not disclose each and every element of applicants' independent claim 60, claim 60 is clearly allowable and patentable under 35 U.S. C. §103 over Wood in view of Nakamura and Dassonville.

Each of the Examiner's rejections has been addressed or traversed. Accordingly, it is respectfully submitted that the application is in condition for allowance. Early and

favorable action is respectfully requested.

If for any reason this Response is found to be incomplete, or if at any time it appears that a telephone conference with counsel would help advance prosecution, please telephone the undersigned or his associates, collect in Waltham, Massachusetts, at (781) 890-5678.

Respectfully submitted,



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